भारतीय मानक
Indian Standard

IS 898 : 2020

रेटेड नारियल जट्टा के रेशे की विशिष्टि

(तीसरा पुनरीक्षण)

Specification for Retted Coir Fibre

(Third Revision)

ICS 55.040; 59.060.10; 59.080.40

भारतीय मानक ब्यूरो
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FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Coir and Coir Products Sectional Committee had been approved by the Textile Division Council.

This standard was originally published in 1961 and subsequently revised in 1964 and 1985. Further it has now been revised to incorporate the additional requirements for Ecomark.

The Ministry of Environment and Forests, Government of India has instituted a scheme for labelling environment friendly products known as 'Ecomark scheme'. This standard is based on the criteria as notified by the Government of India *vide* Gazette Notification No. 893(E), dated 18 September 2018 for labelling coir and coir products as environment friendly.

The Ecomark scheme is being operated by the Bureau of Indian Standards. However, to obtain the licence to use the Ecomark on a product, it is also essential to obtain BIS licence to use the Standard Mark as per the relevant Indian Standard for that product.

The composition of the Committee responsible for the formulation of this standard is given in Annex G.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SPECIFICATION FOR RETTED COIR FIBRE

(Third Revision)

1 SCOPE

This standard prescribes the requirements for four grades of retted coir fibre designated as Grade 1, Grade 2, Grade 3 and Grade 4.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 TERMINOLOGY

3.1 Retted Coir Fibre — The fibre extracted from the green natural coconut husks after retting in flowing, circulating or changed water for a period of minimum three months. However, if the fibre is made out of pre-crushed husks the retting period may be reduced suitably.

4 REQUIREMENTS

4.1 Grades

Coir fibre shall be graded as shown in Table 1 in accordance with colour and maximum permissible impurities.

Table 1 Characteristics of Coir Fibre of Various Grades

(*Clause* 4.1)

Sl No.	Grade	Colour	Maximum Impurities, Percent by Mass
(1)	(2)	(3)	(4)
i)	1	Natural bright	2.0
ii)	2	Natural light brown and/or light grey	3.0
iii)	3	Natural brown and/or grey	5.0
iv)	4	Natural dark brown and/or dark grey	7.0

4.1.1 The percentage of impurities in the fibre shall be determined by the method prescribed in Annex B.

4.2 Length of Fibre

The lengths of fibres shall be designated as follows:

Designation	*Length cm*
'long'	Over 15
'medium'	Over 10 and up to 15
'short'	Over 5 and up to 10
'bit'	Up to and including 5

4.2.1 The percent by mass of ‘long’, ‘medium’, ‘short’ and ‘bit’, fibres shall be as agreed to between the purchaser and the supplier. Where no such agreement exists, the proportion by mass of ‘long’, ‘medium’, ‘short’ and ‘bit’ fibres in any supply shall be not less than 50 percent ‘long’, not more than 5 percent ‘bit’ and the remainder being ‘medium’ ‘short’.

4.2.2 The percent by mass of ‘long’, ‘medium’, ‘short’ and ‘bit’ fibres shall be determined by the method prescribed in Annex C.

4.3 Salt Content

The salt content expressed as sodium chloride in fibre of various grades shall not exceed 4 percent.

4.3.1 The percentage of salt in the fibre in a lot shall be determined by the method prescribed in Annex D.

4.4 Moisture Content

The moisture content in fibre of various grades shall not exceed 15 percent.

4.4.1 The percentage of moisture in the fibre in a lot shall be determined by the method prescribed in Annex E.

4.5 Atmospheric Conditions for Test

Unless otherwise provided for in an agreement between the buyer and the seller, all tests shall be carried out in a standard atmosphere at 65 ± 2 percent relative humidity and 27 ± 2°C temperature (*see also* IS 196).

5 ADDITIONAL REQUIREMENTS FOR ECOMARK

5.1 The product shall meet the requirement specified in this Indian Standard.

5.2 The manufacturer shall produce the consent clearance as per the provisions of *Water (Prevention and Control of Pollution) Act,* 1974 and *Air (Prevention and Control of Pollution) Act,* 1981 and the authorization(s), if required under the rules notified under the *Environment (Protection) Act*, 1986 and the rules made there under while applying for the Ecomark as per *Bureau of Indian Standards Act*, 2016.

5.3 The product(s) or product packaging(s) may display in brief the criteria based on which the product(s) has/have been labeled environment friendly.

5.4 The material used for product packaging(s) shall be recyclable, reusable or biodegradable.

5.5 The product shall meet the specific requirements as given in Table 2.

Table 2 Specific Requirements for Ecomark

(*Clause* 5.5)

Sl No.	Parameters	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Residual pesticides (Sum parameter) (ppm) (Max)	1.0	Annex D of IS 15651
ii)	pH of aqueous extract	6-7	Annex H of IS 8391 (Part 1)

6 PACKING AND MARKING

6.1 Coir fibre shall be suitably packed in bales or as otherwise agreed to between the purchaser and the supplier.

6.2 A label giving the following particulars shall be attached to each bale or package:

a) Grade number;
b) Designation;
c) Net mass of the bale;
d) Any other information required by the buyer; and
e) Criteria for which coir fibre has been labeled as Ecomark (optional).

6.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 Samples for determining the conformity of a lot (or consignment) of the material to this standard shall be selected so as to be representative of the lot.

7.2 Unless otherwise agreed to between the purchaser and the supplier the sampling plan and criteria for conformity as given in Annex F shall be followed.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*	*IS No.*	*Title*
196 : 1966	Atmospheric conditions for testing (*revised*)	8391 : 1987	Specification for rubberized coir sheets for cushioning
15651 : 2006	Textiles — Requirements for environmental labelling — Specification		

ANNEX B

(*Clause* 4.1.1)

METHOD FOR DETERMINATION OF THE PERCENTAGE OF IMPURITIES IN COIR FIBRE

B-1 TEST SPECIMEN

Draw 5 test specimens weighing approximately 60 g each from the test sample (*see* **F-1.4**).

B-2 PROCEDURE

B-2.1 Dry one of the test specimens in a conditioning oven and determine its oven dry mass correct to the nearest 0.05 g.

B-2.2 Immediately after drying remove by hand all pith, husk and other impurities adhering to the fibre and determine the oven dry mass of the cleaned test specimen correct to the nearest 0.05 g.

B-2.3 Calculate the percentage of impurities in the specimen by the following formula:

$$\text{Impurities, percent} = \frac{(M_1 - M_2)100}{M_1}$$

Where,

M_1 = Oven dry mass of the test specimen before cleaning, and

M_2 = Oven dry mass of the test specimen after cleaning.

B- 2.4 Repeat the test with the remaining test specimens. The average of all the values thus obtained shall be deemed to be the percentage of impurities in the coir fibre in the lot.

ANNEX C

(*Clause* 4.2.2)

METHOD FOR DETERMINATION OF THE PERCENT BY MASS OF 'LONG', 'MEDIUM', 'SHORT' AND 'BIT' FIBRES

C-1 TEST SPECIMENS

Draw 3 test specimens weighing approximately 2 g each from the test sample (*see* **F-1.4**).

C-2 EQUIPMENT

For the purpose of this test, a flat table marked with a scale in centimeter to measure up to 15 cm shall be used.

C-3 PROCEDURE

C-3.1 Take one of the test specimens and measure the length of its individual fibre on the scale marked on the table by holding one end of each fibre with the forefinger of the left hand and stretching the other and with the right hand fingers. Put the fibres so measured into four groups according to their length

as given below:

Length of Fibre	*Group*
Up to and including 5.0 cm	1
Over 5.0 cm and up to 10.0 cm	2
Over 10.0 cm and up to 15.0 cm	3
Over 15.0 cm	4

C-3.2 Weigh the fibres in each group and calculate the percentage of the mass of fibres in each group to the total mass of fibres in all the four groups.

C-3.3 Repeat the test with the remaining two test specimens.

C-3.4 Average of the percentage by mass, of fibres in groups 4, 3, 2 and 1 shall be deemed to be the percentage by mass of 'long', 'medium', 'short' and 'bit' in the lot.

ANNEX D

(*Clause* 4.3.1)

METHOD FOR DETERMINATION OF SALT CONTENT IN COIR FIBRES

D-1 TEST SPECIMEN

Draw one test specimen weighing approximately 5 g from the test sample (*see* **F-1.4**).

D-2 CONDITIONING OF TEST SPECIMEN

D-2.1 Prior to evaluation, the test specimen shall be conditioned to moisture equilibrium in a standard atmosphere at 65 ± 2 percent relative humidity and 27 ± 2°C temperature (*see* IS 196).

D- 2.2 When the test specimen has been left in such an atmosphere for 48 h in such a way as to expose, as far as possible, all portions of the test specimen to the atmosphere, it shall be deemed to have reached moisture equilibrium.

D-3 PROCEDURE

D-3.1 Immediately after conditioning (*see* **D-2**), weigh the test specimen. Boil it in 200 ml of distilled water for 30 min. Decant the extract into a beaker and re-extract the test specimen twice each time boiling with 100 ml of distilled water for 15 min and decanting the extract into the same beaker (*see* Note). Filter the extract so decanted and make up the volume to 500 ml with distilled water. Transfer 25 ml of the extract to a conical flask and add 5 ml of 6 N nitric acid. Add to this a measured excess of 0.05 N silver nitrate solution from a burette. Add also 3 ml of reagent grade nitrobenzene and 1 ml of ferric alum indicator and shake the mixture vigorously to coagulate the precipitate. Titrate the mixture against standard 0.05 N solution of potassium thiocyanate. Fake the end point to have been reached when the aqueous solution turns red, which does not fade after 5 minutes.

NOTE — In case sodium chloride is not completely extracted, it may be necessary to repeat the boiling of the test specimen with more water.

D-3.1.1 Make a blank determination with all the reagents but taking distilled water instead of the extract.

D-3.2 Calculate the sodium chloride by the following formula:

Sodium chloride, percent =

$$\frac{N \times (V_1 - V_2) 20 \times 0.05846}{M} \times 100$$

Where,

N = normality of the potassium thiocyanate solution;

V_1 = volume of the potassium thiocyanate solution, in millilitre required for blank titration (*see* **D-3.1.1**);

V_2 = volume of the potassium thiocyanate solution, in millilitre required for titration (*see* **D-3.1**); and

M = mass in gm, of the test specimen after conditioning.

D-3.3 The value so obtained shall be deemed to be the percentage of salt in the fibre in the lot.

ANNEX E

(*Clause* 4.4.1)

METHOD FOR DETERMINATION OF MOISTURE CONTENT IN COIR FIBRE

E-1 APPARATUS

E-1.1 Conditioning Oven

With forced ventilation, provided with positive value control and capable of maintaining a temperature of 100°C to 110°C, equipped with a weighing balance arranged to weigh coir fibre with an accuracy of 0.5 g while suspended within the drying chamber, the holder of the fibre to be of such a type as to ensure free access of the dry air to all portions of the fibre.

E-2 PROCEDURE

E-2.1 Remove the test sample from the sealed container and weigh it correct to the nearest 0.5 g. Place the test specimen in the conditioning oven and dry for 1 h and weigh to the nearest 0.5 g. Dry for another 15 min and weigh to the nearest 0.5 g. Provided the loss in mass in drying of the test specimen, as disclosed by the first and second weighings, does not exceed 0.25 percent of the first weight, take the second weight to be the dry mass of the test specimen. If the loss exceeds 0.25 percent, weight the test specimen at 15 min intervals till the loss between two successive weighings is 0.25 percent or less of the first of the two weights.

E-2.2 Calculate moisture content, percent, by the following formula:

$$\text{Moisture content, percent} = \frac{(M_1 - M_2)100}{M_1}$$

Where,

M_1 = mass of the original test specimen, and

M_2 = mass of the oven-dried test specimen.

ANNEX F

(*Clauses* 7.2, B-1.1, C-l.l *and* D-1.1)

SAMPLING AND CRITERIA FOR CONFORMITY FOR COIR FIBRE

F-1 SAMPLING

F-1.1 Lot

The bales of coir fibre of the same grade, delivered to one buyer against one despatch note shall constitute a lot.

F-1.2 The conformity of a lot to the requirements of this standard shall be determined on the basis of tests carried out on the bales selected from it.

F-1.3 Unless otherwise agreed to between the buyer and the seller, the number of bales to be selected from the lot shall be in accordance with column 2 of Table 3.

F-1.3.1 These bales shall be selected at random. In order to ensure randomness of selection, all the bales in the lot may be serially numbered as 1, 2, 3, and so on and every *r*th bale may be selected until the requisite number is obtained, *r* being the integral part of *N/n* where *N* is the lot size and *n* is the sample size.

F-1.4 For evaluating colour, percentage of impurities, percent by mass of ‘long’, ‘medium’, ‘short’ and ‘bit’ fibres, and salt content, about one kilogram of the coir fibre shall be collected from 20 different randomly distributed places in the bale by taking about 50 g of the fibre from each place. The quantity drawn from each bale shall be kept separately.

Table 3 Number of Bales to be Selected

(*Clause* F-1.3)

Lot Size (*N*)	Sample Size (*n*)
(1)	(2)
Up to 50	3
51 to 100	5
101 to 200	6
201 to 300	7
301 to 500	8
501 to 800	9
801 and above	10

F- 1.4.1 For evaluating moisture content about 500 g of the coir fibre shall be collected from 10 different randomly distributed places in the bale by taking 50 g of the fibre from each place. The quantity so drawn from each bale shall be immediately transferred to a suitable air tight container and the container sealed to avoid any loss of moisture.

F-1.5 Criterion for Conformity

The lot shall be considered as in conformity with the requirements of the standard if the following conditions are satisfied:

a) The colour satisfies the requirements specified in Table 1 and the percent by mass of 'long', 'medium', 'short' and 'bit' fibres of each test sample satisfy the requirements specified in **4.2**.

b) From the observed values of impurities, salt content and moisture content, the average

($\bar{X}$) and the range (R) are calculated separately for each requirement and the value of the expression ($\bar{X}$ + 0.4 R) for each requirement is found to be less than or equal to the corresponding specified value.

NOTES:

1 The average ($\bar{X}$) is the value obtained by dividing the sum of observed values by the number of tests.

2 The range (R) is the difference between the maximum and the minimum in a set of observed values.

ANNEX G

(*Foreword*)

COMMITTEE COMPOSITION

Coir and Coir Products Sectional Committee, TXD 25

Organization	*Representative(s)*
Central Coir Research Institute, Kalavoor	Dr Anita Das Ravindranath (***Chairman***) Smt Sumi Sebastian (*Alternate*)
Coir Pith and Allied Products Manufacturers and Exporters Association, Coimbatore	President Secretary (*Alternate*)
All India Rubberized Coir Products Manufacturers Association, Tirunelveli	Shri Sundaresan Shri Mathew George (*Alternate*)
Central Institute of Coir Technology, Bengaluru	Joint Director Senior Scientific Officer (*Alternate*)
Coconut Development Board, Ernakulam	Shri Sugata Ghosh Dr K. Muralidharan (*Alternate*)
Coir board, Kkochi	Secretary Joint Director (*Alternate*)
Coir Mats and Mattings Association, Ernakulam	Shri V. A. Joeph Shri Pavithran (*Alternate*)
Coir on Foam Products, Coimbatore	Shri Harirajan Shri Philip Varghese (*Alternate*)
Coir Shippers' Council, Cherthala	Shri K. S. Sanjeev Shri Sajan B. Nair (*Alternate*)
Federation of Indian Coir Exporters' Associations, Alleppey	Shrijospaul Mathew Shri Sajan B. Nair (*Alternate*)
Hindustan Coir, Coir Board Complex Alappuzha	Weaving Master Senior Scientific Officer (*Alternate*)
Karnataka State Coir Development Corporation Ltd, Bangalore	Shri G. Kumaraswamy Shri K. R. Kumaraswamy (*Alternate*)
Kerala Organic Manure and Fertilizer	Shri G. Rajesh
Kerala State Coir Corporation Ltd, Alappuzha	Shri G. Sreekumar Shri N. Sunuraj (*Alternate*)
Kerala State Small Scale Coir Manufacturer's Federation, Alappuzha	President Secretary (*Alternate*)
Kerala State Coir Marketing Federation	Shri Suresh Kumar
Kurlon Enterprises Limited, Bangalore	Shri Narendra Kudva Shri P. Anil (*Alternate*)
M M Rubber & Co, Chennai	Shri Joseph Cheriyan
National Coir Research & Management Institute (NCRMI), Thiruvanthapuram	Dr K. R. Anil Shri C. Abhishek (*Alternate*)
National Coir Training & Design Centre, Alappuzha	Assistant Director Alappuzharegional Officer (*Alternate*)
Natural Green Tech (P) Ltd, Bengaluru	Shri Tommy Mathew Shri Abhishek Thomas (*Alternate*)
Orissa Co operative Coir Corporation Ltd, Bhubaneshwar	Managing Director General Manager (*Alternate*)

Organization	*Representative(s)*
Rubber Board, Kottayam	Dr J. Thomas Dr James Jacob (*Alternate*)
Shaa Pith Media Co, Coimbatore	Shri S. Prabhu Shri Ramesh (*Alternate*)
Sivanthi Joe Coirs, Tuticorin	Shri Dunsten Joseph Shri K. Sivakar (*Alternate*)
Tamil Nadu Coir Cooperative Federation, Chennai	Managing Director General Manager (*Alternate*)
Venugopal Fibre Industries, Pattukottai	Shri R. B. Shyam Sunder
BIS Directorate General	Shri A. K. Bera, Scientist 'F' and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri P. N. Murali
Scientist 'D' BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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